Analyzing Compliance with the NICU Neonatal Abstinence Syndrome Pathway

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Analyzing Compliance with the NICU Neonatal Abstinence Syndrome Pathway

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Background

- Neonatal abstinence syndrome (NAS) is a withdrawal syndrome of newborns that develops after birth with the abrupt discontinuation of in utero exposure to drugs of abuse. It typically manifests in the first few days of life and clinical symptoms include neurologic excitability, autonomic instability, impaired weight gain, irritability, and gastrointestinal dysfunction.
- It has been shown that an algorithmic management of NAS is useful for the standardization of management in order to ensure all infants at risk are identified and receive proper treatment and outpatient follow-up.
- Specifically, clinical pathways are common tools used to standardize the care processes in order to maximize patient outcomes and improve organizational efficiency.
- Lehigh Valley Health Network (LVHN) aims to provide the best quality of maternal and neonatal care through implementation of the multidisciplinary Comprehensive Pathway for Perinatal Substance Abuse. (Figure 1) This pathway was developed to ensure all mothers with substance abuse and their infants at risk for NAS, or with NAS, are identified, treated, and followed after discharge. Pathway compliance has not previously been assessed.

Problem Statement

- This is a quality improvement project designed to assess compliance and non-compliance (in percentage %) with the LVHN multidisciplinary Comprehensive Pathway for Perinatal Substance Abuse.

Methods

- Internally designed quality improvement project within the LVHN Labor and Delivery, NICU, and Mother Baby Units.
- Retrospective chart review of neonates placed on the Comprehensive Pathway for Perinatal Substance Abuse (from July 1, 2017- July 1, 2018).
- Charts identified using a urine (UDS-10) or meconium (MecDS) drug screen code.
- Exclusion criteria: the baby died or the baby was transferred to an outside center for care.
- Pathway compliance was measured using 6 pre-determined compliance points (see Table 1).
- Number of charts included for each compliance point was determined on chart-by-chart basis, as following the Comprehensive Pathway for Perinatal Substance Abuse.
- Chart review of consisted of looking through EPIC specifically in the clinical notes, lab orders, and nursing flow-sheets tab.
- Percent compliance and non-compliance with the pathway was determined for each compliance point.
- Qualitative data for 5-6 recorded.
- Goal for pathway compliance was set at 100% for each compliance point 1 through 6.

Table 1

Compliance Point	
1	If maternal UDS ordered, did infant have BOTH urine drug screen and meconium drug screens ordered? Location of baby (MBU/NICU) noted.
2	If maternal or infant drug screen is positive (unless for THC only) did infant receive Finnegan scoring? Location of baby (MBU/NICU) noted.
3a 3b	If +UDS for illegal substances on mom or baby, was Children & Youth (OCYS) contacted? If +UDS for illegal substances on mom or baby was follow-up with Child Advocacy Clinic (CAC) arranged?
4	If baby has 3 Finnegan scores >8 or <12 x2 was infant sent to NICU?
5	If infant was started on morphine, did weaning start once Finnegan scores were <8 for 48hrs? Provider reasoning for non-compliance (if charted) was recorded.
6	Was morphine weaned every 24hrs if Finnegan scores were <8? Provider reasoning for non-compliance (if charted) was recorded.

Results

- A total of 161 charts were pulled due to having either UDS10 or MecDS code ordered.
- 2 charts were excluded (refer to Table 2 for full description of analyzed groups).
- Refer to Table 3 for percentage compliance at each compliance point 1 through 6.
- Qualitative data regarding documented provider reasoning for non-compliance with compliance points 5 and 6 is presented in Table 4.

Table 2

Number of charts flagged with UDS-10 or MecDS	161
Total number of charts analyzed	159
Number of charts excluded*	2
Number of charts analyzed Compliance point 1	159
Number of charts analyzed Compliance point 2	53 (Included if Finnegan scoring required)
Number of charts analyzed Compliance point 3	21 (Included if UDS+ for illegal substance)
Number of charts analyzed Compliance point 4	18 (Included if baby had 3 Finnegan scores >8 or <12 x2)
Number of charts analyzed Compliance point 5	15 (Included if baby on morphine)
Number of charts analyzed Compliance point 6	15 (Included if baby on morphine)
*1 baby died and 1 baby was transferred to outside center for care	

Table 3

Compliance Point	n=	Compliance (%)	Non-compliance (%)
1 (Both UDS-10 and MecDS ordered)	159	88.05	11.95 No UDS-10 8.81 No MecDS 3.14
2 (Finnegan scoring initiated when necessary)	53	84.90	15.10
3a (+UDS for illegal substances (excluding THC) was OCY contacted?	21	100.00	0.00
3b (+UDS for illegal substances was CAC (excluding THC) follow-up arranged?)	21	71.43	28.57
4 (3 Finnegan >8, sent to NICU)	18	94.45	5.55
5 (morphine weaning start once Finnegan scores were <8 for 48hrs)	15	73.33	26.67
6 (morphine weaned every 24hrs if Finnegan scores were <8)	15	60.00	40.00

Table 4

Compliance Point	Provider Documented Reasoning
5	1. Morphine wean started early due to nurse concern infant was sleepy 2. Infant was removed from pathway due to iatrogenic NAS
6	1. 1 month old infant not sleeping between feeds is irrelevant due to age 2. Infant appeared subjectively agitated and irritable 3. Infant removed from pathway due to iatrogenic NAS 4. Finnegan scores trending up

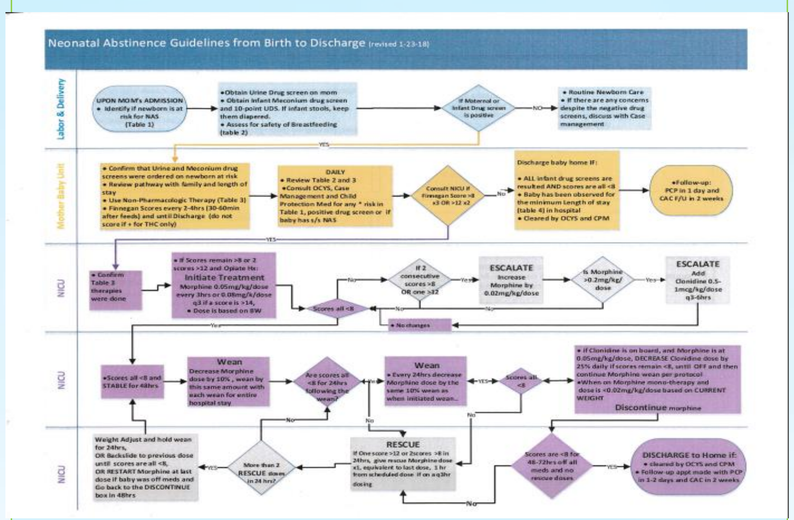

Figure 1: Comprehensive Pathway for Perinatal Substance Abuse

Discussion

General Discussion:

- **The only compliance point that met 100% goal was referral to OCYS.**
- **Compliance point 1 had 88.05% compliance**. Reasons for non-compliance may be late order entry or late attempt at collecting the urine/meconium samples. Orders must be placed in a timely manner after birth for results to be reliable. Providers also occasionally cancel the Meconium drug screen when the urine is resulted as negative, which is inappropriate and requires re-education.
  - **To improve compliance**: An order set that includes Finnegan scoring and both drug screens was developed and is currently in the process of being incorporated into the EPIC electronic medical record.
- **Compliance point 2 had 84.90% compliance**. Reasoning for non-compliance may include clinical time limitations for nursing staff with Finnegan scoring as well as miss-education of providers of when Finnegan scoring needs to be conducted. Upon initial data assessment it appeared that compliance with scoring was even worse; however, the majority of babies that did not get Finnegan scoring were preterm infants who were NPO and/or on narcotics for surgery. Finnegan scoring has not been validated, nor is it appropriate, for either of these populations.
  - **To improve compliance:** Re-education about when to start Finnegan scoring and on which babies.
- **Compliance point 3a had 100% compliance and point 3b had 71.43%.** One contributing factor for apparent non-compliance with the CAC follow-up is that babies of mothers, who are compliant with prescribed medications, such as suboxone or methadone, who are not showing any signs of NAS, or whose mothers are in a program for chronic pain or narcotic abuse, do not actually need OCYS referral or CAC follow-up.
  - **To improve compliance:** Guidelines regarding this are not currently well specified in the pathway; modification will be made with clear guidelines on who should be seen in CAC after discharge, regardless if an OCYS referral was indicated.
- **Compliance point 4 met closes to 100% goal at 94.45% compliance**. Reasons for non-compliance include the subjective nature of the scoring. There is NICU provider discretion allowed for choosing to keep the infant with Mom in MBU if an elevated score is felt to be due to environmental factors and there is no required use of non-pharmacological measures for NAS.
  - **To improve compliance**: Re-education of mom and nursing would allow infants to be calmed with non-pharmacologic measures and reduce need to come to NICU or need medications.
- **Compliance point 5 and 6 had 73.33% and 60.00% compliance.** Based off of qualitative data collected if was determined that often babies with borderline scores, aka scores close to 8, will not get weaned daily for provider fear of making them withdraw more. This practice only increases the length of stay (LOS) for these babies.
  - **To improve compliance:** Re-education of providers with encouragement to continue to wean morphine as long as scores are <8.

Project limitations:

- Compliance was measured only through assessment of documentation in EPIC.

SELECT Principles:

- A quality improvement project focused on the SELECT domain of health systems.
- NAS caries an enormous burden in terms of hospital days and costs.
- Using data obtained from this project, LVHN is able to improve standardization of care, for both inpatient and outpatient follow-up, to mother of infants and infants with NAS.

Conclusions

- Overall, this project assessed compliance with the Comprehensive Pathway for Perinatal Substance Abuse and determined that only one compliance point met the 100% compliance goal.
- Data gathered allowed departments (Obstetrics, NICU, MBU) to identify areas where pathway compliance is low so that changes could be implemented.
- Possible reasons for non-compliance were discussed within the involved departments.
- Current and future changes include:
  - development of order sets that include both urine/meconium drug screens and Finnegan scoring
  - non-pharmacologic management of NAS
  - modification of the pathway to better define outpatient follow-up needs
  - re-education of nursing and providers regarding proper Finnegan scoring and morphine weaning protocols.

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